

Indian Dairying

Challenges and Opportunities

VIJAY KUMAR



Indian Dairying



NIPA® GENX ELECTRONIC RESOURCES & SOLUTIONS P. LTD.

New Delhi-110 034

About the Author



The author, Dr. Vijay Kumar, B.V.Sc. & A.H. (CCSHAU, Hisar), M.V.Sc. and Ph.D. (Animal Genetics & Breeding), National Dairy Research Institute, Karnal, Assistant Professor in Department of Animal Genetics and Breeding at U.P. Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura, Uttar Pradesh, India, has been closely associated with teaching in Animal Genetics and Breeding since 2011. He has published two books and one book chapter on Animal Genetics and Breeding subject. He has also published more than 60 research and review papers in reputed national and international scientific journals. He is the recipient of Director's Medal and Academic Excellence Award in Ph.D.

Indian Dairying Challenges and Opportunities

Vijay Kumar

Assistant Professor

Department of Animal Genetics & Breeding

College of Veterinary Science & Animal Husbandry

U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya

Evam Go Anusandhan Sansthan (DUVASU)

Mathura, Uttar Pradesh



NIPA® GENX ELECTRONIC RESOURCES & SOLUTIONS P. LTD.

New Delhi-110 034



**NIPA® GENX ELECTRONIC
RESOURCES & SOLUTIONS P. LTD.**

101,103, Vikas Surya Plaza, CU Block
L.S.C.Market, Pitam Pura, New Delhi-110 034
Ph. +91 11 27341616, 27341717, 27341718
E-mail: newindiapublishingagency@gmail.com
www: www.nipabooks.com

For customer assistance, please contact

Phone: + 91-11-27 34 17 17
Fax: + 91-11-27 34 16 16
E-Mail: feedbacks@nipabooks.com

© 2023, Publisher

ISBN: 978-81-19002-46-7

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, including electronic, mechanical, photocopying recording or otherwise without the prior written permission of the publisher or the copyright holder.

This book contains information obtained from authentic and highly reliable sources. Reasonable efforts have been made to publish reliable data and information, but the author/s, editor/s and publisher cannot assume responsibility for the validity, accuracy or completeness of all materials or information published herein or the consequences of their use. The work is published with the understanding that the publisher and author/s are not attempting to render any professional services. The author/s, editor/s and publisher have attempted to trace and acknowledge the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission and/or acknowledgements to publish in this form have not been taken. If any copyrighted material has not been acknowledged, please write to us and let us know so that we may rectify the error, in subsequent reprints.

Trademark Notice: NIPA®, the NIPA® logos and their presentations (the way they are written/presented) in this book are the trademarks of the publisher and hence may not be used without written permission, if copied or used without authorization, the infringer will be prosecuted as per law.

NIPA® also publishes books in a variety of electronic formats. Some content that appears in print may not be available in electronic books, and vice versa

Composed and Designed by NIPA®.



उ.प्र.पं. दीनदयाल उपाध्याय पशु चिकित्सा विज्ञान विश्वविद्यालय
एवं गो अनुसंधान संस्थान, मथुरा-281001 (उ.प्र.)
U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan
Vishwavidyalaya Evam Go Anusandhan Sansthan (DUVASU)
Mathura-281001 (U.P.)



प्रो.(डॉ.) ऐ.के. श्रीवास्तव
कुलपति
Prof. (Dr.) A.K. Srivastava
Vice-Chancellor

Foreword

I am immensely delighted to write a foreword for the book entitled, “Indian Dairying: Challenges and Opportunities” written by Dr. Vijay Kumar of Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan, Mathura. India's journey from a milk deficit country to milk surplus nation has been historic. Indian dairy industry is symbolic to the upward trajectory of the country's economic power and influence. Consumers with growing socio-economic status and more income are looking for healthy food alternatives. As a consequence, milk and milk products are growing in popularity. Although, India has emerged as the highest milk producer in the world and dairy industry has played a very significant role in economic, social and nutritional well-being of rural masses. There are many challenges for Indian dairy sector. In spite of widespread popularity of Indian dairy products, India is a very minor player in the world dairy food market. There are several reasons responsible for this situation such as slow breed improvement, shortage of feed and fodder, emerging new disease, poor penetration of technologies at farmers' door, inadequacy of appropriate technologies for commercial production, lack of quality assurance system and more important nonexistence of industry-institution linkage.

The objective of the book is to enlighten stake holders on different important issues on dairy sector of India. I am confident that this book will go a long way in helping the students, dairy farmers, entrepreneurs, academicians, researchers and other stake holders of the dairy sector. I wish the author all the best.



A K Srivastava

Preface

India has an enormous wealth of cattle, which is crucial to the development of the socioeconomic status of millions of rural households as well as the country's economy. In addition to giving millions of people access to low-cost nutritious food, this industry plays a significant role in boosting family incomes and creating gainful employment in rural areas, notably among landless laborers, small and marginal farmers, and the women. The introduction of dairying has been beneficial for dairy producers and particularly significant for those societal groups that have historically been weak. It has given a year-round source of income where they previously could only rely on revenues from seasonal crops or irregular labor. Dairying has developed into a full-fledged industry in the nation, positively enhancing the lives of those involved in the industry, whether directly or indirectly, and bringing about significant socioeconomic improvements. With expanding population, growing urbanization and increasing purchasing power, the demand for milk and milk products is expected to go up. We need to catch up with the daunting challenge to produce more milk and convert it efficiently into value added products. Global trend in animal production also indicates a rapid and massive increase in consumption of dairy products. To meet the domestic demand of milk and to generate sufficient exportable surplus, the growth rate in our milk production needs to be accelerated.

Indian dairy research priorities need to be focused on development of technologies in the area of dairy science viz. animal production, milk processing and extension and marketing. There is a need to increase the number of animals with superior germplasm, at the same time the number of non-producing and less producing animals should be reduced in order to minimize the competition on limited feed and fodder. Further the major challenges which require urgent attention are, low productivity, breed improvement, shortage of feed and fodder, emerging new disease, poor penetration of technologies at farmers door etc. To unpack these issues being faced by Indian dairy sector, it is pertinent to dive deep and list out the factors that have been hampering the productivity, processing and marketing of milk and dairy products.

I am highly thankful to Prof. A K Srivastava, Vice Chancellor, DUVASU, Mathura for appreciating my effort. I am also thankful to the students and

teachers who read my two books on Animal Genetics & Breeding and encouraged me to write a book on Indian Dairying. I am also highly thankful to my family members – my wife Kajal, my son, my mother and my elder brothers & sister.

I hope this book will be of great use and help to the students, dairy farmers & entrepreneurs, dairy industry personnel, academicians, researchers and stakeholders in Indian dairy sector.

Vijay Kumar

Contents

<i>Foreword</i>	v
<i>Preface</i>	vii
1. Livestock Production Statistics of India	1
2. Indian Dairy Sector.....	5
3. Dairy Business Challenges	13
4. Standards for Milk and Milk Products	19
5. Dairy Animals in India.....	23
6. Buffalo is the Future	57
7. Genetic Improvement of Animals.....	59
8. Health Management.....	65
9. Feed and Fodder	89
10. Importance of Mineral Mixture for Dairy Animal.....	93
11. Feeding Bypass Protein to Dairy Animals.....	99
12. Feeding Bypass Fat to Dairy Animals	103
13. Housing Management.....	105
14. Record Management.....	107
15. Reproduction Management.....	115
16. Milking Management.....	139
17. Dairy Cooperative	143
18. Carbon Foot Print of Milk	147
19. Future Sciences for Indian Dairy	149

Indian Dairying

Challenges and Opportunities

India has an enormous wealth of cattle and buffalo, which is crucial to the development of the socioeconomic status of millions of rural households as well as the country's economy. Dairying has developed into a full-fledged industry in the nation, positively enhancing the lives of those involved in the industry. With expanding population, growing urbanization and increasing purchasing power, the demand for milk and milk products is expected to go up. We need to catch up with the daunting challenge to produce more milk and to generate sufficient value added products. To meet the domestic demand of milk and to generate sufficient exportable surplus, the growth rate in our milk production needs to be accelerated. The major challenges which require urgent attention are, low productivity, breed improvement, shortage of feed and fodder, emerging new disease, poor penetration of technologies at farmers door etc.

This book will be of great use and help to the students, dairy farmers & entrepreneurs, dairy industry personnel, academicians, researchers and stake holders in Indian dairy sector.

Vijay Kumar: Assistant Professor, Department of Animal Genetics and Breeding
College of Veterinary Sciences & Animal Husbandry, U.P. Pandit Deen Dayal Upadhyaya Pashu
Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan, DUVASU
Mathura – 281001, Uttar Pradesh



**NIPA GENX ELECTRONIC
RESOURCES & SOLUTIONS P. LTD.**

101,103, Vikas Surya Plaza, CU Block
L.S.C.Market, Pitam Pura, New Delhi-110 034
Ph : +91 11 27341616, 27341717, 27341718
E-mail: newindiapublishingagency@gmail.com
www: www.nipabooks.com

978-81-19002-46-7



9788119002467